ISSN (print) 0093-4666 © 2015. Mycotaxon, Ltd. ISSN (online) 2154-8889

MYCOTAXON

http://dx.doi.org/10.5248/130.1039

Volume 130, pp. 1039–1043 *October–December 2015*

Phyllachora jianfengensis sp. nov. from China

Na Liu* & Mengzhen Li

College of Biological Engineering, Henan University of Technology, Lianhua street, High & New Tech Development District, Zhengzhou 450001, China

* Correspondence to: *liuna3456@163.com*

Abstract—A new species, *Phyllachora jianfengensis,* causing tar spots on leaves of *Miscanthus sacchariflorus* is reported from Hainan Province. *Phyllachora jianfengensis* differs from similar species by its longer ascospores.

Key words—*Phyllachoraceae*, *Phyllachorales*, taxonomy

Introduction

The conserved generic name *Phyllachora* Nitschke ex Fuckel was published by Fuckel (1870) with *P. graminis* (type) and 17 other species. The genus was initially defined as fungi parasitic on leaves or stems of plants and with obvious stroma. Following modern research (Doidge 1942, Parbery 1967, Cannon 1991, Pearce & Hyde 1994), the characteristics of *Phyllachora* are being parasitic and having paraphyses, unitunicate 8- or 4-spored asci, and hyaline ascospores. According to Kirk et al. (2008), *Phyllachora* belongs to *Phyllachoraceae*, *Phyllachorales*, and includes about 944 species worldwide.

An undescribed *Phyllachora* species was reported on leaves of *Miscanthus sacchariflorus* collected from Hainan Province, China, in 2007. It differs morphologically from other *Phyllachora* species on three genera of *Andropogoneae* subtribe *Saccharinae* (*Imperata*, *Miscanthus*, and *Saccharum*) and is described here as *Phyllachora jianfengensis*.

Materials & methods

We measured the length and width of leaf spots with a ruler and observed the presence of holes with a magnifying glass. The characters of asci were observed after they were separated from ascomata with dissecting needle and stained in lactophenol blue solution. The asci and ascospore were measured using a C7 ocular micrometer and Nikon E200MV photomicroscope. We prepared slices by using a Leica CM1850UV

freezing microtome. The holotype of the new species is deposited in the Herbarium Mycologicum Academiae Sinicae, Beijing, China (HMAS).

Taxonomy

Phyllachora jianfengensis Na Liu & M.Z. Li, **sp. nov.** Plate 1

Fungal Name FN570152

Differs from *Phyllachora ischaemi, P. miscanthi, P. miscanthidii,* and *P. tengchongensis* by its longer ascospores.

Type: China, Hainan Province, Jianfengling, alt. 900 m, on *Miscanthus sacchariflorus* (Maxim.) Hack. (*Poaceae*), 18 XI 2007, S.H. He, L. Guo & Z. Li 2014 (HMAS 245921, **holotype**).

Etymology: From Jianfengling mountain, where the new species was collected.

Leaf spots immersed in the mesophyll on ellipsoidal glossy black leaf spots 0.6–3 mm in diam, surrounded by pale yellow haloes, visible both sides of leaves, sparse, 1–4-loculate, subglobose, ostiolate. Ascomata 202–278 × 180–213 μm, immersed in the mesophyll layer of the leaves, subglobose or ellipsoidal, upper wall up to 25 μm thick composed of black material, lateral wall up to 18 μm thick composed of epidermal cells and black material, and lower wall up to 13 μm thick composed of parenchyma cells; asci rising from the basal and lateral wall of the ascoma. Paraphyses 1–2 μm wide, filiform, aseptate, unbranched, shorter than asci, thin-walled. Asci 83–125 × 11–26 μm, cylindrical to clavate, apex round or slightly sharp, thin-walled, 8-spored, long pedunculate or without peduncle, unitunicate. Ascospores 32–37 × 5–9 μm, biseriate or arranged irregularly, long ellipsoidal with slightly sharp apex to oblong, unicellular, hyaline, smooth. Anamorph not seen.

Comments—Species of *Phyllachora* with ascospores longer than 30 μm are uncommon. Based on the assumption that *Phyllachora* species are likely to be host-specific, we compared our collection with *Phyllachora* species reported from the related hosts *Miscanthus*, *Imperata*, and *Saccharum* (Chen 2007, Hodkinson et al. 2002).

Four *Phyllachora* species have been recorded on *Miscanthus*: *P. ischaemi* Syd. & P. Syd. with ovato-ellipsoidal ascospores (12–15 × 5–6.5 μm) and cylindraceo-clavate asci (45–60 × 12–18 μm; Sydow & Sydow 1915), *P. miscanthi* Syd. & P. Syd. with broadly ellipsoidal ascospores (18–24 × 12–14 μm) and cylindriceo-clavate asci (160–180 × 18–22 μm; Sydow & Sydow 1917), *P. miscanthidii* Doidge with ellipsoidal to subclavate ascospores (22–27.5 × 7.5–10 μm) and cylindrical to cylindrico-elliptical asci (125 × 17–20 μm; Doidge 1942), and *P. tengchongensis* Na Liu & L. Guo with narrowly ellipsoid ascospores (15–26 × 5–10 μm) and clavate asci (93–159 × 15–23 μm;

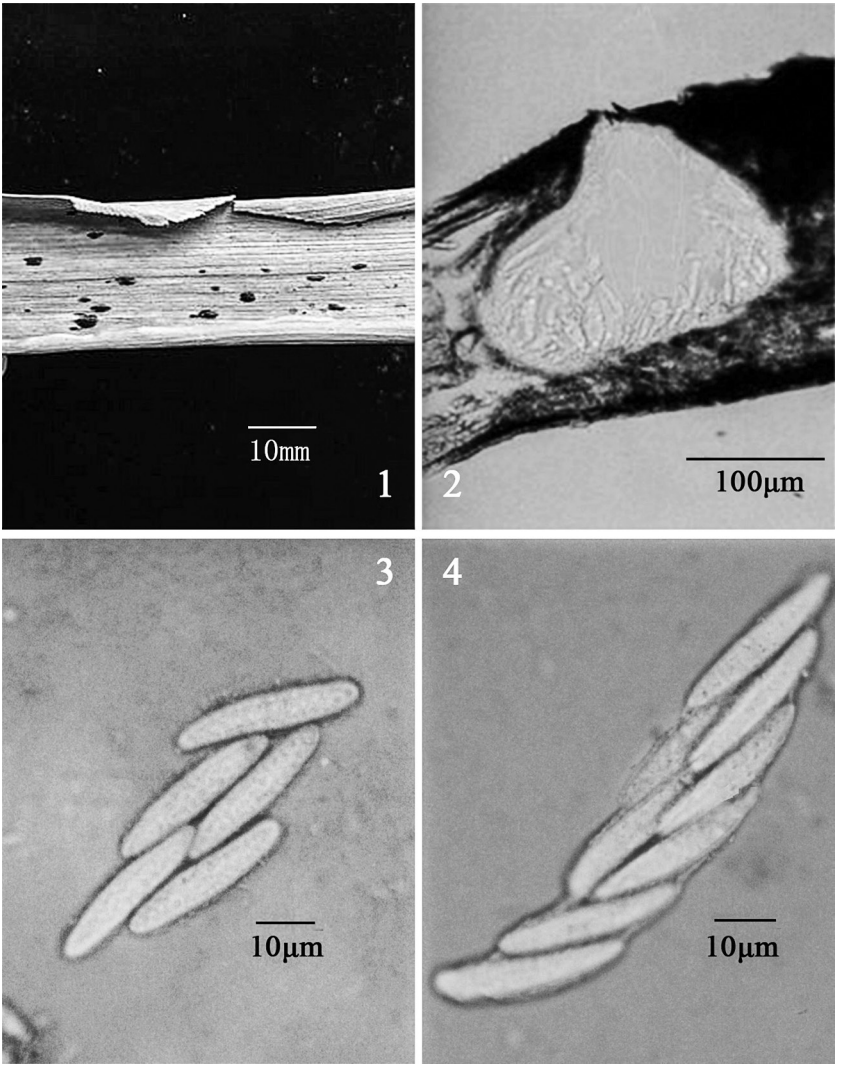

Plate 1. *Phyllachora jianfengensis* (HMAS 245921, holotype).
1. Leafspots; 2. Ascomata; 3, 4; Asci and ascospores.

Liu et al. 2007). These species all differ from *P. jianfengensis* by their much shorter ascospores; additionally, *P. ischaemi* differs by its shorter asci and *P. miscanthi* by its longer asci and wider ascospores.

Two *Phyllachora* species have been reported on *Imperata*: *P. oxyspora* Starbäck (= *P. imperatae* Syd. & P. Syd., = *P. antioquensis* Chardón, and = *P. sorghastri* Chardón; Species Fungorum 2015) with clavulate ascospores (20–25 × 5–6 µm) and cylindrical asci (96–115 × 9–10 µm; Starbäck 1899) and "*P. imperaticola*" Sawada (an invalid name, lacking a Latin description) with ellipsoidal ascospores (17–19 × 9–10 µm) and clavate-cylindrical asci (89–110 × 13–18 µm; Sawada 1959). Both species differ from *P. jianfengensis* by their much shorter ascospores as well as their host specialisation; and *P. oxyspora* additionally differs by its narrower asci.

Two *Phyllachora* species have been reported on *Saccharum*: *P. sacchari-spontanei* Syd. & P. Syd. with fusiform ascospores (22–27 × 7.5–8.5 µm) and clavate asci (75–100 × 18–22 µm; Sydow & Sydow 1913) and *P. sacchari* Henn. (= *P. sacchari-aegyptiacae* Briosi & Cavara, = *P. sorghi* Höhn., = *P. rottboelliae* Syd. et al., and = *P. andropogonicola* Speg.; Species Fungorum 2015) with ellipsoid to ovoid ascospores (12–18 × 9–12 µm) and clavate asci (80–120 × 15–18 µm; Hennings 1902). Both species differ from *P. jianfengensis* by their much shorter ascospores as well as by their host specialisation, and *P. sacchari* additionally differs by its wider ascospores.

Acknowledgments

The authors would like to thank Dr. Roger Shivas (Brisbane, Australia) and Dr. Jing Luo (Rutgers University, New Brunswick, USA) for serving as pre-submission reviewers; Drs. Shuanghui He, Lin Guo, and Zhenying Li for collecting the specimen; and Dr. Jiamei Li (Henan Agricultural University, Zhengzhou, China) for identifying the host plant; Dr. Shaun Pennycook (Auckland, New Zealand) for nomenclatural review; and Dr. Lorelei Norvell for selfless help. This study was supported by the National Natural Science Foundation of China (No. 31300015) and Natural Science Research Project of Henan Province (No. 132300410350).

Literature cited

Cannon PF. 1991. A revision of *Phyllachora* and some similar genera on the host family *Leguminosae*. Mycol. Pap. 163. 302 p.

Chen SF, Dong SS, Wu W, Shi SH, Zhou PH. 2007. Phylogenetics of *Triarrhena* and related genera based on ITS sequence data. J. Wuhan Bot. Res. 25(3): 239–244.

Doidge EM. 1942. Revised descriptions of South African species of *Phyllachora* and related genera. Bothalia 4: 421–463.

Fuckel L. 1870. Symbolae mycologicae. Beiträge zur Kenntniss der rheinischen Pilze. Jahrb. Nassauischen Vereins Naturk. 23–24. 459 p.

Hennings P. 1902. Fungi javanici novi a cl. Prof. Dr. Zimmermann collecti. Hedwigia 41: 140–149.

Hodkinson TR, Chase MW, Lledó MD, Salamin N, Renvoize SA. 2002. Phylogenetics of *Miscanthus*, *Saccharum* and related genera (*Saccharinae*, *Andropogoneae*, *Poaceae*) based on DNA sequences from ITS nuclear ribosomal DNA and plastid trnL intron and trnL-F intergenic spacers. J. Plant Res. 115: 381–392. http://dx.doi.org/10.1007/s10265-002-0049-3

Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Ainsworth & Bisby's dictionary of the fungi. 10th ed. Biddles Ltd.

Liu N, Guo L. 2007. *Phyllachora tengchongensis* sp. nov. and a new records of *Phyllachora* (*Phyllachorales*) from China. Mycotaxon 100: 251–254.

Parbery DG. 1967. Studies on graminicolous species of *Phyllachora* Nke. in Fuck. V. A taxonomic monograph. Austr. J. Bot. 15: 271–375. http://dx.doi.org/10.1071/BT9670271

Pearce CA, Hyde KD. 1994. The genus *Phyllachora* from Australia: observation of *Phyllachora* species from *Callistemon*. Mycol. Res. 98: 1393–1401. http://dx.doi.org/10.1016/S0953-7562(09)81069-1

Sawada K. 1959. Descriptive catalogue of Taiwan (Formosan) fungi. Part XI. Special Publ. Coll. Agric. Natl. Taiwan Univ. 8. 268 p.

Species Fungorum. 2015. http://www.speciesfungorum.org/Names/Names.asp [accessed: March 2015].

Starbäck K. 1899. Ascomyceten der ersten Regnellschen Expedition. I. Bih. Kongl. Svenska Vetensk.-Akad. Handl., Afd. 3, 25(1). 68 p.

Sydow H, Sydow P. 1913. Enumeration of Philippine fungi, with notes and descriptions of new species. Part I: micromycetes. Philipp. J. Sci., C, Bot. 8: 265–285.

Sydow H, Sydow P. 1915. Novae fungorum species – XIII. Ann. Mycol. 13: 35–43.

Sydow H, Sydow P. 1917. Beitrag zur Kenntnis der Pilzflora der Philippinen-Inseln. Ann. Mycol. 15: 165–268.